

Appl. No. 09/829,7000
Amdt. Dated February 21, 2006
Reply to Office action of September 21, 2005

Amendments to the Specification:

On page 1 of the specification, insert after the title and before the first paragraph the following title:

“Background of the Invention”

On page 2 of the specification, insert after the second full paragraph and before the third full paragraph the following title:

“Summary of the Invention”

On page 3 of the specification, insert after line two the following title:

“Brief Description of the Drawings”

On page 3 of the specification, after the full paragraph that begins with “Fig. 4” and before the paragraph that begins with “As is already evident . . .”, insert the following title:

“Detailed Description of the Preferred Embodiments”

Please revise the first full paragraph of page 4 of the specification as follows:

In terms of the compression, this is accomplished in particular by plotting the specific gradients of the individual scaling results as a function of the loss of

hearing and approximating them by a specific $HVLS/LOHL$ function, i.e. by the gradient of the loudness factor as a function of the hearing loss HV/HL . The individual $HVLS/LOHL$ function when compared to the average hearing-impaired $HVLS/LOHL$ function permits the determination of a factor which describes the loudness sensitivity of the individual in comparison with the standard.

Please revise the second full paragraph of page 4 of the specification as follows:

In terms of the amplification, this is accomplished by plotting the specific levels L_0 of the individual scaling results as a function of the hearing loss and approximating them by a specific HVL_0/HLL_0 factor, where the level for loudness = 0 as a function of the loss of hearing HV/HL . The individual HVL_0/HLL_0 factor, compared to the average HVL_0/HLL_0 factor of the hearing-impaired, permits the determination of an offset which describes the mean value of the difference in the abscissa of the loudness function of the individual in comparison with the standard.

Please revise the fourth full paragraph of page 7 of the specification as follows:

As pointed out further above, loudness scaling is performed at a minimum of one and preferably at three reference or data sampling points, i.e. at one or several different frequencies. Based on these reference values a so-called $HVLS/LOHL$ factor is established by plotting the gradients of the loudness factor $a_1, a_2, a_3 \dots$ as a function of hearing loss HV/HL in dB.

Please revise the fifth full paragraph of page 7 of the specifications as follows:

FIG. 3 shows an $HVLS/LOHL$ function for a hearing-impaired person, with the

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individual HVLS/LOHL function, represented by the dashed line, established via three data sampling points for building a suitable model as explained below.

Please revise the sixth full paragraph of page 7 of the specifications as follows:

The following model has been found to be particularly useful in determining the gradient a as a function of hearing loss HV/HL (for hearing loss between 20 dB and 100 dB):

$$\log_{10} = a_a \times \text{HV/HL} + b_a \times \log(\text{HV/HL}) + \text{VP}_{\text{consta}}$$

Please revise page 8 of the specifications as follows:

for $20 \text{ dB} < \text{HV/HL} < 100 \text{ dB}$,

where

- a = gradient of the loudness function,

HV/HL = hearing loss in dB,

a_a, b_a = constant function parameter, and

$\text{VP}_{\text{consta}}$ = the individual function parameter which adapts the HVLS/LOHL factor to the data sampling points a_1, a_2, a_3, \dots

It should be mentioned at this juncture that, having been extrapolated from several data sampling points, the individual HVLS/LOHL factor illustrated in FIG. 3 shows less dispersion-related deviation than do the sampling points by themselves, thus providing a better reflection of changes in individual perception. Although it would be possible to obtain the targeted reference settings for the hearing aid already on the basis of this individual HVSL/LOHL factor, to determine the gradient a at 0 dB hearing loss by extrapolation (dotted curve in

FIG. 3) and to set the hearing aid accordingly, it has been found that the setting of the hearing aid can be substantially improved if data on the healthy ear are also included in the equation. According to the invention the normal loudness perception should be used as a reference for determining the individually needed compression at 0 dB hearing loss. In the process, according to the invention, the fact is taken into account that even the loudness perception of persons with normal hearing tends to vary to a more than negligible extent.

Please revise the second full paragraph of page 9 of the specifications as follows:

As pointed out further above, loudness scaling is performed at a minimum of one and preferably at three reference or data sampling points, i.e. at one or several different frequencies. Based on these data points the $HVL0/HLL0$ factor is established by plotting the abscissa sections for the loudness factor $L_{01}, L_{02}, L_{03}, \dots$ as a function of hearing loss HV/HL in dB.

Please revise the third paragraph of page 9 of the specifications as follows:

FIG. 4 shows the $HVL0/HLL0$ factor for a hearing-impaired person with the individual $HVL0/HLL0$ function, represented by the dashed line, established via three data

Please revise page 10 of the specifications as follows:

sampling points for building a suitable model as explained below.

The following model has been found to be particularly useful in determining L_0 as a function of hearing loss HV/HL (for hearing loss between 20 dB and 100 dB):

$$L_0 = a_L \times HV/HL + b_L \times \log(HV/HL) + VP_{constL}$$

for $20 \text{ dB} < HV/HL < 100 \text{ dB}$,

where

- L_0 = level of loudness=0,
- HV/HL = hearing loss in dB,
- a_L, b_L = constant function parameter, and
- VP_{constL} = individual function parameter which adapts the $HVL0/HLL0$ function to the data sampling points $L_{01}, L_{02}, L_{03}, \dots$

It should be mentioned at this juncture that, having been extrapolated from several data sampling points, the $HVL0/HLL0$ factor illustrated in FIG. 4 shows less dispersion-related deviation than do the sampling points by themselves, thus providing a better reflection of changes in individual perception. Although it would be possible to obtain the targeted reference settings for the hearing aid already on the basis of this individual $HVL0/HLL0$ factor, to determine the level L_0 at 0 dB hearing loss by extrapolation (dotted curve in FIG. 3) and to set the hearing aid accordingly, it has been found that the setting of the hearing aid can be substantially improved if, similar to the gradient a , data on the healthy ear are also included in the equation. According to the invention the standard